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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/562,145	12/23/2005	Kenichi Morimoto	0951-0178PUS1	5521
2292 7590 12/30/2009 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747				
EXAMINER				
HA, NGUYEN Q				
ART UNIT		PAPER NUMBER		
2854				
NOTIFICATION DATE		DELIVERY MODE		
12/30/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary

Application No.

10/562,145

Applicant(s)

MORIMOTO ET AL.

Examiner

'Wyn' Q. HA

Art Unit

2854

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2, 4, 6, 7, 9, 10, 13, 14, 16 and 22-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2, 4, 6, 7, 9, 10, 13, 14, 16 and 22-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Drafts/Person's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

An examiner's overview of the present invention

The present invention aims to prevent printing on a double-fed sheet.

Case 1: In a straight pass type printer, an image is printed on a first sheet P1 (as shown in figs. 3 & 7a, reproduced below).

FIG.3

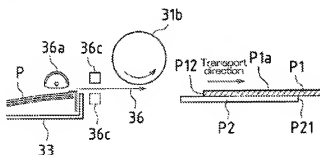
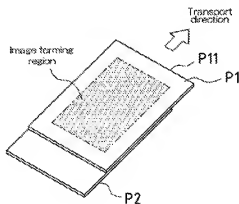


FIG.7 (a)



Case 2: In a front-feeding type printer with a U-turn pass, an image is not printed on a first sheet P1 (as shown in figs. 4 & 7b, reproduced below). In this case 2, an image may be printed on a second sheet P2.

FIG. 4

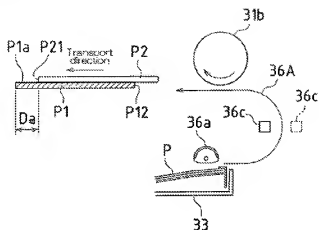
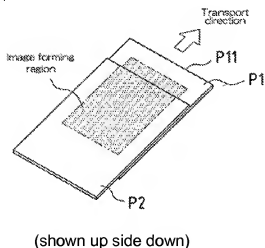


FIG. 7 (b)



Claim Objections

Claims 2, 4 and 6 are objected to because of the following informalities:

With respect to the phrase “when image formation is performed in **a case that multi-feeding has occurred**” (in the bottom paragraph of the claims), it appears that

applicant intended "a case" to be one of the previously recited cases. Therefore, it is suggested that the phrase be changed to --when image formation is performed **and multi-feeding has occurred as in one of the cases--**.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

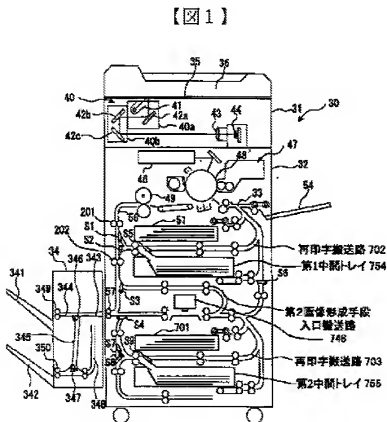
Claims 2, 6, 7, 13, 14, 16, 22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irihara (JP 2002193559 A) in view of Momose (JP 2002046309 A), Nishimura (JP 62106446 A), and Nanbu et al. (JP 07187442 A).

Claim 2:

Irihara teaches an image forming apparatus 30 (Fig. 1, reproduced below) comprising a recording paper transport system that transports recording paper and an image forming system 48 that forms an image on recording paper transported by the recording paper transport system.

The image forming apparatus is provided with a "**straight pass type printing system**" comprising a manual paper feed device 54, having one or more movable feed members (e.g. feed rollers), and a "**front feeding type printing system with a U-turn**

pass," having a paper feed cassette 51 and one or more movable feed members that supply recording paper by making contact with recording paper that has been placed on one or more placement stages and extracting that recording paper from the placement stages with frictional force between the feed member and the contacted recording paper and transport the recording paper to the image forming system 48, wherein:



the placement stages include a **first placement stage** in which the contact face of the recording paper contacted by the feed member (the feed roller of the manual paper feed device 54) is the image forming face, and a **second placement stage** in which the contact face of the recording paper contacted by the feed member (the feed

roller of the cassette paper feed device 51, shown in fig.1) is not the image forming face.

In the mentioned first placement stage, and in a case that multi-feeding has occurred, in which when a first recording paper is transported by the recording paper transport system another recording paper is also transported, the other recording paper is not positioned between the first recording paper and the image forming portion 48 of the image forming system.

In the mentioned second placement stage, and in a case that multi-feeding has occurred, in which when a first recording paper is transported by the recording paper transport system another recording paper is also transported, the other recording paper is positioned between the first recording paper and the image forming portion 48 of the image forming system.

Irihara further teaches **a paper sensor/detector** that grasps and manages a state of recording paper passing each part of the image forming apparatus (Par. 0044).

Irihara doesn't teach the following features:

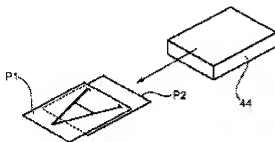
when, in a case that multi-feeding has occurred in which when a first recording paper is transported by the recording paper transport system another recording paper is also transported, and the other recording paper is not positioned between the first recording paper and an image forming portion of the image forming system, image forming processing for the first recording paper by the image forming system is automatically continued without operator input, and

when, in a case that multi-feeding has occurred in which when a first recording paper is transported by the recording paper transport system another recording paper is also transported, and the other recording paper is positioned between the first recording paper and an image forming portion of the image forming system, image forming processing for the first recording paper by the image forming system is prohibited.

Momose teaches an image forming apparatus including the features not taught by Irihara:

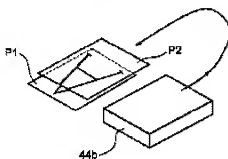
when, in a case that multi-feeding has occurred in which when a first recording paper P1 (See fig. 14, reproduced below) is transported by the recording paper transport system another recording paper P2 is also transported, and the other recording paper P2 is not positioned between the first recording paper P1 and an image forming portion of the image forming system, image forming processing for the first recording paper by the image forming system is automatically continued without operator input (Par. 0054: "If a double feed occurs with a **straight pass type printer...printing will be performed only to the top print sheet P1.**" **Understandably, said printing to the top print sheet P1 is automatically continued without operator input**),

【 14 】



and when, in a case that multi-feeding has occurred in which when a first recording paper P1 (See fig. 15, reproduced below) is transported by the recording paper transport system another recording paper P2 is also transported, and the other recording paper P2 is positioned between the first recording paper P1 and an image forming portion of the image forming system, image forming processing for the first recording paper P1 by the image forming system is prohibited (Pars. 0055 – 0059: "If a double feed occurs with a **front feeding type printer**...printing would be performed over the print sheet P2 located in the top here, and the print sheet P1 located in the bottom [not printed]." Understandably, said printing over the print sheet P2 is automatically continued without operator input).

【 15 】



Momose, similar to Irihara, further teaches **a paper length sensor/detector 56** that measures a passing paper length, in order to determine the extent of multi-feeding. Namely, when the paper length sensor/detector 56 detects a passing paper length to be longer than an applicable paper page, the image forming apparatus judges that the extent of multi-feeding has occurred (Par. 0032).

It would have been obvious to one of ordinary skill in the art at the time the present invention was made to have Irihara's image forming apparatus perform the mentioned features taught by Momose, in order to prevent a printing mistake, and further comprise a paper length sensor/detector, in order to determine the extent of multi-feeding, as also taught by Momose.

Irihara as modified by Momose is silent about **the paper length sensor/detector detects a leading or trailing edge of the recording paper, and when multi-feeding has occurred as in one of the mentioned cases, a reference for judging the occurrence of defects (jams) based on the detection information of the leading or trailing edge of the recording paper from the paper detector is changed to a reference taking into consideration the extent of multi-feeding and a reference time that is used for judging a jammed state.**

Nishimura teaches an image forming apparatus including **a paper length sensor/detector to detect a passing paper length, and in a case that multi-feeding has occurred, a reference for judging the occurrence of defects (jams) based on the**

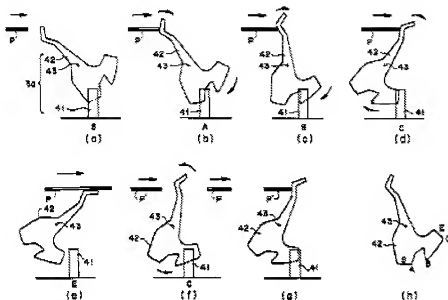
detection information (length) is changed to a reference taking into consideration the extent of multi-feeding and a reference time that is used for judging a jammed state.

That is, in order to prevent detection of a multi-feeding state as erroneously being a jammed state, the image apparatus does not generate a jammed-state procedure when two sheets of recording paper are merely carried while overlapping, but rather the state in question is decided based on a reference corresponding to, e.g., a length of two continuous carried sheets (See Nishimura's abstract).

It is not known now to the examiner whether Nishimura's paper length sensor/detector detects a leading or trailing edge of the recording paper in order to detect the mentioned passing paper length (detection information).

Nanbu teaches an image forming apparatus which includes a paper length sensor 3a (Fig. 1, reproduced below), and which also does not generate a jammed-state procedure when two sheets of recording paper are merely carried while overlapping. At least as illustrated in fig. 1, Nanbu's paper length sensor 3a detects a leading or trailing edge of a recording paper P in order to detect a passing paper length.

FIG. 1



It would have been obvious to one of ordinary skill in the art at the time the present invention was made to have Nishimura's paper length sensor/detector detects a leading or trailing edge of the recording paper in order to detect a passing paper length, at least as an alternative design, in view of Nanbu. Therefore, it would have been obvious to one of ordinary skill in the art to have the paper length sensor/detector in Nishimura's apparatus as modified detect a leading or trailing edge of the recording paper; and when multi-feeding has occurred as in one of the mentioned cases, a reference for judging the occurrence of defects (jams) based on the detection information of the leading or trailing edge of the recording paper from the paper detector is changed to a reference taking into consideration the extent of multi-feeding and a reference time that is used for judging a jammed state, in view of Nishimura and Nanbu,

in order to prevent detection of a multi-feeding state as erroneously being a jammed state.

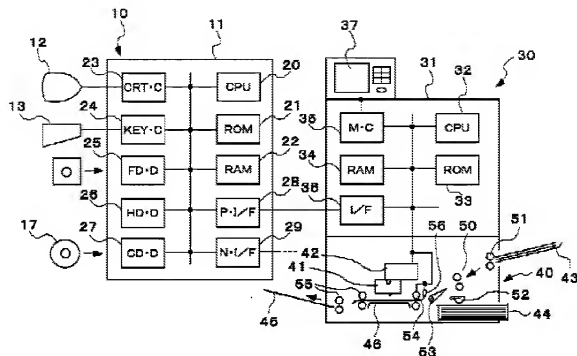
Claim 6:

Irihara as modified teaches an image forming apparatus provided with all that is claimed (See discussion in claim 2).

Claim 7:

Irihara as modified teaches the image forming apparatus according to claim 2, wherein **the detector 56** (Momose's) is provided between the placement stage (paper feed device/tray/cassette 43, 44) of the recording paper and the image forming portion 41, 42 of the image forming system (See Momose's fig. 1 reproduced below).

【図 1】



Claim 13:

Irihara as modified teaches the image forming apparatus according to claim 7, wherein a notifier is provided that, in the case that multi-feeding has been detected by the detector, makes such a notification (Momose's Abstract "In the case a transceiver part 66 of the printer host 10 receives the duplicate dispatch error status, a user interface 68 makes a display device 12 display the duplicate dispatch error generation").

Claim 14:

Irihara as modified teaches the image forming apparatus according to claim 13, wherein the notifier makes a notification of information of the recording paper for which image formation could not be performed due to multi-feeding (Momose Para 0029:

"Please remove the paper which is not printed out of the paper to which paper was delivered, and resume printing." "Please take out the paper with which only one side is printed out of the paper to which paper was delivered, and set the paper the top on a paper feed tray").

Claim 16:

Irihara as modified teaches an electronic equipment, wherein the image forming apparatus according to claim 2 is a scanner apparatus, copy apparatus, or facsimile apparatus, or a multifunction machine in which any two or more of these are combined (Irihara's fig. 1).

Claims 22 and 24:

Irihara as modified teaches the image forming apparatus according to claims 2 and 6, wherein when image formation is performed in the case that multi-feeding has occurred, the reference time that is used for judging a jammed state is changed longer to a second reference time by a predetermined length (which is, e.g., a length of two continuous carried sheets — See Nishimura's abstract).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Irihara in view of Momose, Nishimura and Nanbu, as applied to claim 2, and further in view of Yoshimoto (JP 05088564 A).

Irihara as modified teaches the image forming apparatus having all the claimed features, except for a transfer bias being increased from a normal transfer bias when performing image formation in the case that multi-feeding has occurred.

Yoshimoto teaches an image forming apparatus in which a transfer bias is increased from the normal transfer bias when performing image formation in the case that multi-feeding has occurred, in order to sufficiently transfer toner to produce a good image, thus prevent waste of paper that might otherwise receive a poor image onto it (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the present invention was made to have Irihara's modified apparatus increase a transfer bias from the normal transfer bias when performing image formation in the case that multi-feeding has occurred, in order to sufficiently transfer toner to produce a good image, thus prevent waste of paper that might otherwise receive a poor image onto it, in view of Yashimoto.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Irihara in view of Momose, Nishimura and Nanbu, as applied to claim 2, and further in view of Nakagawa (JP 07295311 A).

Irihara as modified teaches the image forming apparatus comprising all the claimed features, except for a fixing temperature being increased from a normal fixing temperature when performing image formation in the case that multi-feeding has occurred.

Nakagawa teaches an image forming apparatus in which a fixing temperature is increased from a normal fixing temperature when performing image formation in the case that the recording paper is thick, in order to provide an excellent image (Abstract).

It would have been obvious to one of ordinary skill in the art at the time the present invention was made to have Irihara's modified apparatus increase a fixing temperature from a normal fixing temperature when performing image formation in the case that multi-feeding has occurred (because multi-fed recording papers are thicker than a single-fed paper), in order to provide excellent image, in view of Nakagawa.

Claims 4 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irihara in view of Momose, Nishimura and Nanbu and Kobayashi (JP 07125351 A).

Claim 4:

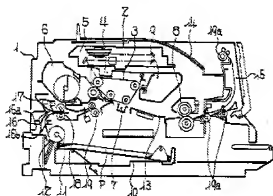
Irihara as modified (See claim 1 above) teaches an image forming apparatus provided with all the claimed features, except for the following:

when, in the case that multi-feeding has occurred in which when a first recording paper is transported by the feed member another recording paper is also supplied, and the first recording paper has been fed from the second replacement stage, image forming processing for the other recording paper by the image forming system is continued.

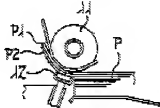
Kobayashi, similar to Irihara/Momose, teaches an image forming apparatus (Fig. 2, reproduced below) provided with a **“front feeding type printing system with a U-**

turn pass" comprising a paper feed cassette 10 having one or more movable feed members 11 (feed roller 11) that supply recording paper P by making contact with recording paper P that has been placed on one or more placement stages and extracting that recording paper P from the placement stages with frictional force between the feed member 11 and the contacted recording paper P and transport the recording paper to the image forming system 48.

【図2】



【図3】



In Kobayashi's apparatus, in a case that multi-feeding has occurred in which when a first recording paper P1 (Fig. 3, reproduced above) is transported by the feed member 11 another recording paper P2 is also supplied, and the contact face of the first recording paper contacted by the feed member is not the image forming face, image forming processing for the other recording paper by the image forming system is continued (Abstract "A detection signal is supplied from the multi-feeding detector when two or more papers overlap. Based on the measured distance, the output timings of the main scanning direction or sub scanning direction signal is changed so that the image is printed only on the last paper P2 among the papers which overlap with each other").

Note that the feed member 11 doesn't contact image forming face of the recording paper P1 (or P2) since the image forming system 6 forms an image on the other face of the paper (See fig. 2).

It would have been obvious to one of ordinary skill in the art at the time the present invention was made, in view of Kobayashi, to have Momose's multi-feeding detector 56 (See claim 7 above) also measure a sheet distance. Based on the measured sheet distance, the output timings of the main scanning direction or sub scanning direction signal is then changed so that the image is printed only on the other (last paper) P2 among the papers which overlap with each other. As such, in the case that multi-feeding has occurred in which when a first recording paper P1 is transported by the feed member another recording paper P2 is also supplied, and the first recording paper P1 has been fed from the second replacement stage, image forming processing for the other recording paper P2 by the image forming system is continued. As a result, an image would always be properly printed regardless of any double-sheet feeding. Operability of Irihara's modified image forming apparatus thus would be further enhanced, in view of Kobayashi.

Claim 23 (parallel to claims 22 and 24):

Irihara as modified teaches the image forming apparatus according to claim 4 (as discussed above), wherein when image formation is performed in the case that multi-feeding has occurred, the reference time that is used for judging a jammed state is

changed longer to a second reference time by a predetermined length (which is, e.g., a length of two continuous carried sheets).

Response to Arguments

Applicant's arguments with respect to claims 2, 4 and 6 have been considered but are not persuasive, since the cited references clearly teach that the image forming apparatus is automatically continued without operator input. Even when a double-feed error occurs, the apparatus is automatically continued to print correctly on a fed sheet (See discussion in claim 1 above).

In addition, Momose teaches an embodiment in which the apparatus will automatically continue to print all pages of a print job (having a plurality of pages) and provide an "error generation" listing where between the printed pages a double-fed sheet is located or where a double-feed error "printing needlessness" has occurred (e.g., see pars. 0074-0077).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to 'Wyn' Q. HA whose telephone number is (571)272-2863. The examiner can normally be reached on Monday - Friday, from 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NQH

/Judy Nguyen/
Supervisory Patent Examiner, Art Unit 2854